DOCUMENT RESUME

ED 440 981 TM 030 767

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TITLE	Building Successful Teacher Use of Computers in the Classroom: Results from a 1998-99 Survey of WCPSS Middle School Teachers.
INSTITUTION	Wake County Public School System, Raleigh, NC. Dept. of Evaluation and Research.
REPORT NO	WCPSS-DER-00.09
PUB DATE	2000-01-00
NOTE	26p.; For other reports from the Wake Public School System, see TM 030 768-769.
PUB TYPE	Numerical/Quantitative Data (110) -- Reports - Research (143) -- Tests/Questionnaires (160)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Computer Uses in Education; *Middle School Teachers; Middle Schools; *Professional Development; *Teacher Characteristics; Teacher Surveys; *Training
IDENTIFIERS	*Wake County Public School System NC

ABSTRACT

The Wake County Public School System, North Carolina, conducted a survey of middle school teachers regarding computer use and compared their use of computers to specific demographics: subjects taught, favored instructional purposes, age, years of teaching experience, and gender. Responses were received from 231 teachers, a response rate of 77%. Middle school teachers used computers more as their level of training increased, especially when the training addressed their specific subject areas. More frequent use was also related to specific training components, such as demonstrations and modeling or coaching and feedback. Participants' teaching areas showed a statistically significant relationship to computer use, with special education teachers most likely to use computers and physical education teachers least likely to use them. Consistent patterns with instructional approach were also evident. Teachers using a student-centered approach showed higher overall computer use. Younger teachers were more likely to use computers. Teachers also reported that having demonstrations and modeling of computer use on site increased their own instructional use of computers. Recommendations are made for continued staff development and additional training with a focus on subjects taught. The teacher survey is attached. (Contains 12 figures and 14 references.) (SLD)

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Building Successful Teacher Use of Computers in the Classroom

TM030767

Report No. 00.09
Department of Evaluation and Research
January, 2000

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WAKE COUNTY PUBLIC SCHOOL SYSTEM

E&R Report No. 00.09 January 2000

Building Successful Teacher Use of Computers in the Classroom

Results from a 1998-99 Survey of WCPSS Middle School Teachers

Author: Rosemary Reichstetter, Ed.D.

EXECUTIVE SUMMARY

A 1999 study led to the following findings and recommendations pertaining to the instructional use of computers by middle school teachers.

MAJOR FINDINGS

Middle school teachers in the Wake County Public School System use computers more as their level of training increases, especially when that training addresses their specific subject areas*. More frequent use is also related to specific training components delivered by the instructor (presentation of theory, demonstrations/modeling of use, coaching/feedback regarding use, and practice) and to the availability of ongoing support.

The study concluded that technology training, addressing teaching areas (e.g., language arts, mathematics, sciences, etc.), and the delivery of specific training components combine to be the best predictor of subsequent computer use by teachers. The study further concluded that technology training was related to frequency of classroom instructional use in nine of eleven types of computer technology (e.g., word processing, spreadsheets, databases, desktop publishing). Of overall interest is that approximately one-third (31%) of the teacher respondents reported no computer use in their lessons at all and many reported no computer use in specific computer technology types.

■ Teacher Demographics

Demographic information was gathered pertaining to the participants' age, gender, years of teaching experience, teaching area, and primary instructional approach. Of these, the participants' teaching area showed a statistically significant relationship to computer use in the multiple regression analysis. Consistent patterns were evident with instructional approach,

* The level of statistical significance in all analyses was 0.05.

age, years of teaching experience, and gender concerning computer use, although these data did not show any statistical significance.

- **Teaching Area**

  Subsequent to technology training, the subject area taught by middle school teachers was the factor that most affected their computer use in the classroom. Special education teachers' computer use was higher than all other teaching areas. Physical education teachers showed the lowest amount of computer use.

- **Instructional Approach**

  Those teachers using a student-centered instructional approach showed higher overall computer use than those using a traditional teacher-centered approach.

- **Age, Years of Teaching, and Gender**

  Middle school teachers' computer use was related to both age and years of teaching experience. Younger teachers (21 to 30) reported the greatest use of computers, followed by the oldest group (51 and over). Regarding years of teaching experience, teachers with one to six years of experience reported the highest frequency of computer use. Females in the study tended to use computers more than males.

■ Training

The study compared computer use to type of training received (e.g., word processing, spreadsheets, databases, desktop publishing, etc.) and training delivery components (e.g., presentation of theory, coaching, practice). Both of these areas were of significance in combination with addressing teaching areas in the multiple regression analysis.

- **Type of Training**

  The types of training teachers reported participation in ranged from basics such as word processing to advanced topics such as desktop publishing, Web Page design, and multimedia. Correlations between the amount of training received and computer use were low but most were statistically significant. In a regression analysis, the overall amount of training teachers received was also significantly related to technology use.

- **Delivery of Training**

  Teachers perceived that training which included components such as presentation of theory, demonstration/modeling, coaching, feedback, and practice was effective in fostering their instructional use of computers once back in the classroom. Reports of actual computer use confirmed this.

■ Ongoing Support

Although not statistically significant, teachers reported use of computers increased based upon levels of administrative support and the presence of an on-site technology coordinator. Teachers also reported that the availability of hardware and software impacted their level of use when, in fact, reports of use did not corroborate this.

⌘ **Administration**

As teachers' levels of satisfaction with school and school system administrative support increased, their reported use of computers also tended to increase. Although these data were not statistically significant, it was a consistent pattern.

⌘ **Hardware/Software Availability**

Reported classroom use of computers did not increase as teacher levels of satisfaction with hardware and software availability increased. In fact, some teachers reporting the most use actually felt the least satisfied with hardware and software available to them.

⌘ **On-Site Technology Coordinator**

Teachers reported that having demonstrations and modeling of computer use on site increased their own instructional use of computers. Likewise, on-site follow-up after training was reported by the teachers as beneficial toward increasing their computer use. This was confirmed in their reported usage, although not at a 0.05 level of statistical significance.

RECOMMENDATIONS

- With the large number of teachers reporting a lack of instructional computer use in their classrooms, it is suggested that staff development efforts continue to emphasize technology-training opportunities for teachers that also provide ongoing support.

- It is further recommended that such training continue to incorporate a combination of training components that can enhance transfer (presentation of theory, demonstration and modeling of use, coaching, feedback, and practice).

- Too, a focus on trainers as learner-centered with teachers as learners and problem-solvers may better lead to the development of broader skill sets in teachers' use of computers.

- Lastly, technology training may be of greater benefit to teachers if subject-oriented.

Summarily, it is recommended that training and support efforts in the various computer technology types of applications are designed and available with strategies that incorporate the specific curricula for each teaching area.

From a research viewpoint, a periodic replication of this study, perhaps broadened to include elementary and/or high school teachers as well, may provide information pertaining to trends. Too, the school system may wish to integrate the elements of this survey within a system-wide survey.

Building Successful Teacher Use of Computers in the Classroom

Results from a 1998-99 Survey of WCPSS Middle School Teachers

METHODS

The *Survey of Computer Technology Training and Implementation* (Appendix) used in this study included five sections: Demographic Information, Instructional Practices, Types of Computer Technology Training Receives, Instructional Use of Computer Technology, and Factors Affecting Computer Technology Implementation. Rosemary Reichstetter, Curriculum Integration Coordinator at East Millbrook Middle School during the period of the study, developed and administered the survey to collect data for her doctoral dissertation at NC State University. She established face validity and content validity for the survey, and estimated its test-retest reliability to be high (Spearman's r=0.96).

A random sample was selected from all full-time WCPSS middle school teachers. (High levels of computer use required of computer lab business teachers excluded them from the study.) School stratified the sample, with 15 teachers selected from each school. Participation in the study was voluntary for both schools and teachers. One WCPSS middle school opted not to participate, but all 19 other schools in the system did participate. Most teachers in the sample chose to participate, and 231 of 285 surveys were returned (a response rate of 77%). Statistical methods used to analyze results of the survey included both correlation and multiple regression.

As a cautionary measure, observations and/or interviews regarding frequency of computer technology use may be desirable to provide supportive data to accompany the self-reporting survey format used in this study.

TEACHER DEMOGRAPHICS

The study investigated teachers' instructional use of computers and compared the use to specific demographics: subjects taught, favored instructional approaches, age, years of teaching experience, and gender.

First, data provided information about the ways in which teachers tended to use computers. The study included eleven types of use: word processing, desktop publishing, graphics, multimedia, spreadsheets, databases, telecommunications, Internet, Web Pages, programming, or subject-specific software. Word-processing was the most frequent type of computer use overall at 3.66 days per quarter (DPQ). Another frequent type of use was with software related to specific subject areas (2.48 DPQ). Some other frequent types of teacher instructional use were the Internet (1.35 DPQ), multimedia (1.10 DPQ), and desktop

publishing (1.08 DPQ). The least frequent types of use were Web Page design (0.17 DPQ) and programming language (0.02 DPQ) (see Table 1).

Table 1. Rank Ordered Average Instructional Use of Computers in Days per Quarter

Rank	Computer Technology Category	Survey Item Number	Mean Use in Days per Quarter
1	Word Processing	20	3.66
2	Subject-specific Software	30	2.48
3	Internet	27	1.35
4	Multimedia	23	1.10
5	Desktop Publishing	21	1.08
6	Graphics	22	0.69
7	Telecommunications	26	0.57
8	Databases	25	0.45
9	Spreadsheets	24	0.39
10	Web Page Design	28	0.17
11	Programming Language	29	0.02

Note. Ranking of 1=High

■ Teaching Area

The study included nine teaching areas: language arts, mathematics, science, social studies, health/PE, special education, foreign language, vocational education, and the arts. With overall computer usage separated into teaching areas, survey results show that special education teachers reported the greatest amount of computer use (28.19 DPQ) while health/physical education teachers showed the least (2.46 DPQ). Figure 1 displays computer use by each of the nine teaching areas studied, while details are given in Table 2 regarding the specific types of computer technology used by teachers in each teaching area.

Figure 1. Overall Classroom Computer Use by Teaching Area.

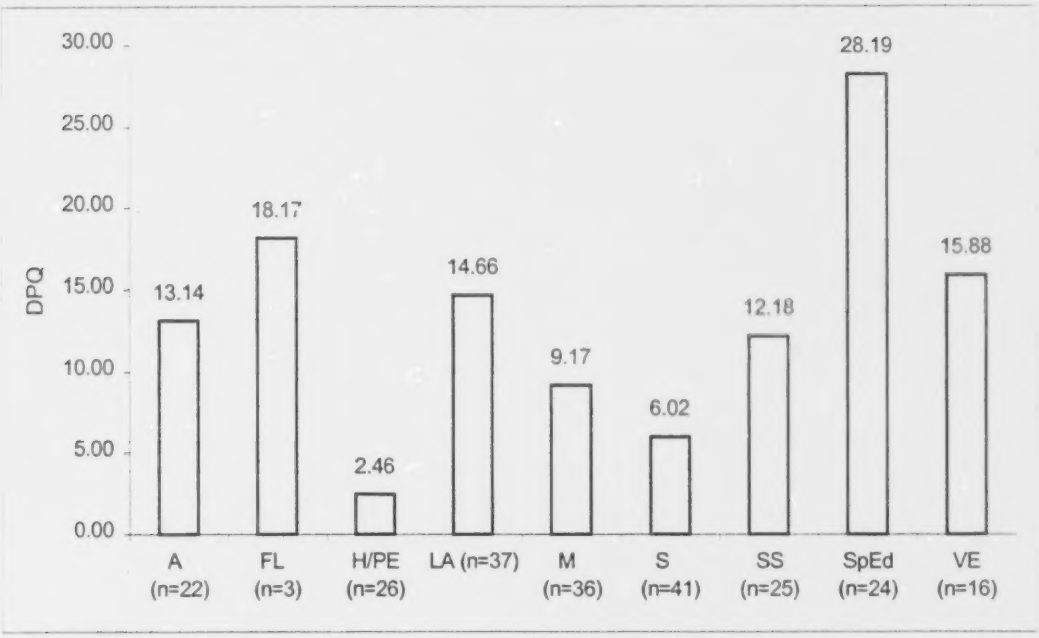


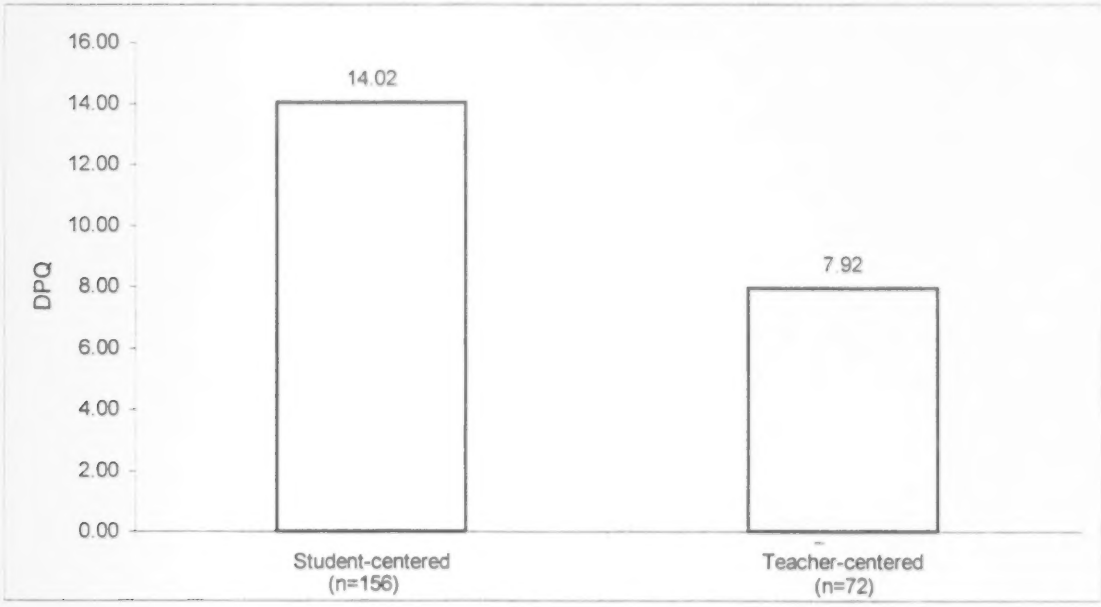
Table 2. Types of Computer Use by Teaching Area

	Arts	For.Lang.	H/PE	Lang.Arts	Math	Science	SocSt	SpEd	VocEd
n=	22	3	26	37	36	41	25	24	16
Word Processing	3.95	12.50	0.62	4.62	1.19	1.74	2.28	11.17	5.88
Desktop Publishing	0.50	0.00	0.15	2.46	0.14	0.11	1.16	3.17	1.88
Graphics	1.55	1.67	0.12	0.24	0.19	0.11	0.56	1.38	3.06
Multimedia	0.95	0.67	0.62	0.85	0.50	1.60	2.62	0.40	1.56
Spreadsheet	0.50	1.67	0.27	0.08	0.61	0.34	0.60	0.50	0.00
Database	0.00	1.67	0.12	0.22	0.33	0.20	1.38	1.33	0.06
Telecommunications	0.00	0.00	0.00	1.97	1.14	0.29	0.12	0.00	0.13
Internet	2.68	0.00	0.38	2.08	1.81	0.87	0.74	1.63	0.56
WebPage Design	0.68	0.00	0.00	0.41	0.28	0.00	0.00	0.00	0.00
Programming language	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.13
Subject-specific Software	2.32	0.00	0.19	1.65	2.97	0.76	2.72	8.63	2.63
Mean Use	13.14	18.17	2.46	14.66	9.17	6.02	12.18	28.19	15.88

■ Instructional Approach

The survey included items to ascertain respondents' typical instructional approach, either student-centered or teacher-centered, and then related this information to the frequency of technology use. Teachers who tended to use a student-centered instructional approach also tended to show higher levels of computer usage although the results were not statistically significant at the 0.05 level. They used computers an average of 14 days per quarter, whereas teachers typically employing a teacher-centered approach reported an average computer use of only 7.92 days per quarter (see Figure 2).

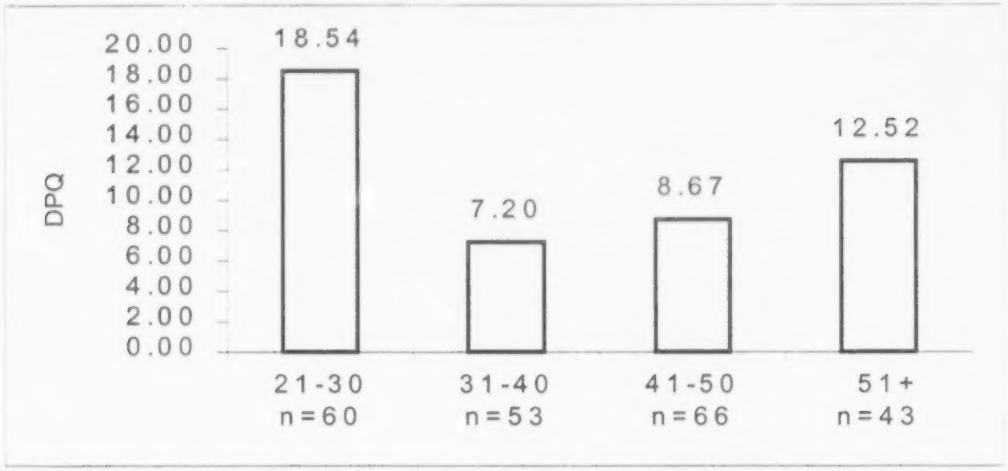
Figure 2. Frequency of Classroom Technology Use in Relation to Instructional Approach.



■ Age, Years of Teaching Experience, and Gender

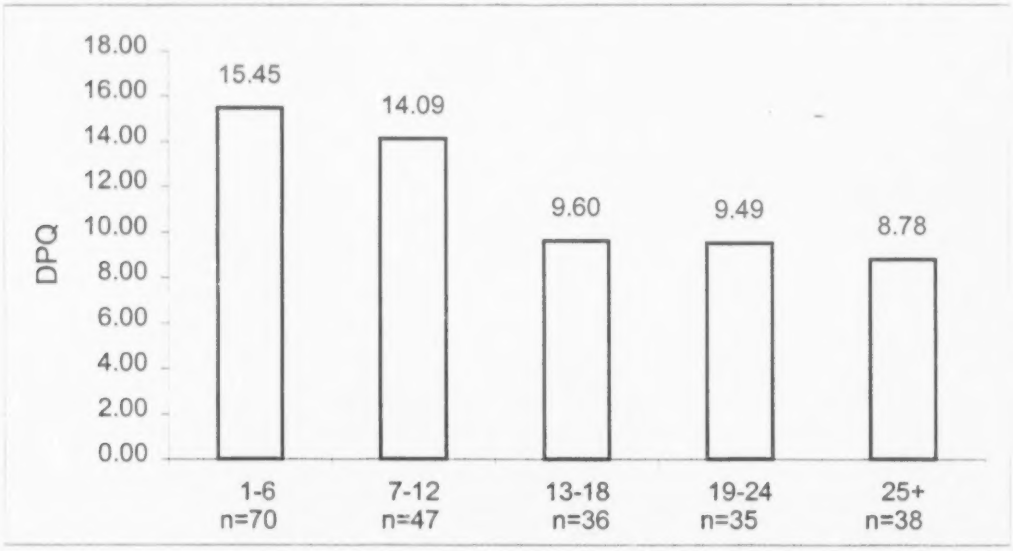
The youngest group (21-30) reported the most frequent overall instructional use of computers (18.54 DPQ). Respondents 51 or over were next in frequency of use (10.80 DPQ) followed closely by the 41-50 age group (10.43 DPQ). The 31-40 age group reported the lowest instructional use of computers (7.20 DPQ) (see Figure 3).

Figure 3. Instructional Computer Use by Age Group.



Teachers with the least years of teaching experience (1 to 6 years) reported the highest computer use for instructional purposes (15.45 DPQ). Teachers with the most years of teaching experience (25+ years) reported the least amount of use (8.78 DPQ) with the exception of five teachers who did not report their years of teaching experience (1.40 DPQ). Figure 4 displays overall instructional computer use by years of teaching experience.

Figure 4. Instructional Computer Use by Years of Teaching Experience.



Most (81%) of survey respondents were female and 18.3 % were male. This mirrors closely the WCPSS demographics for gender (81% female; 19% male). Females tended to use computers more frequently than males (see Figure 5).

Figure 5. Instructional Computer Use by Gender.

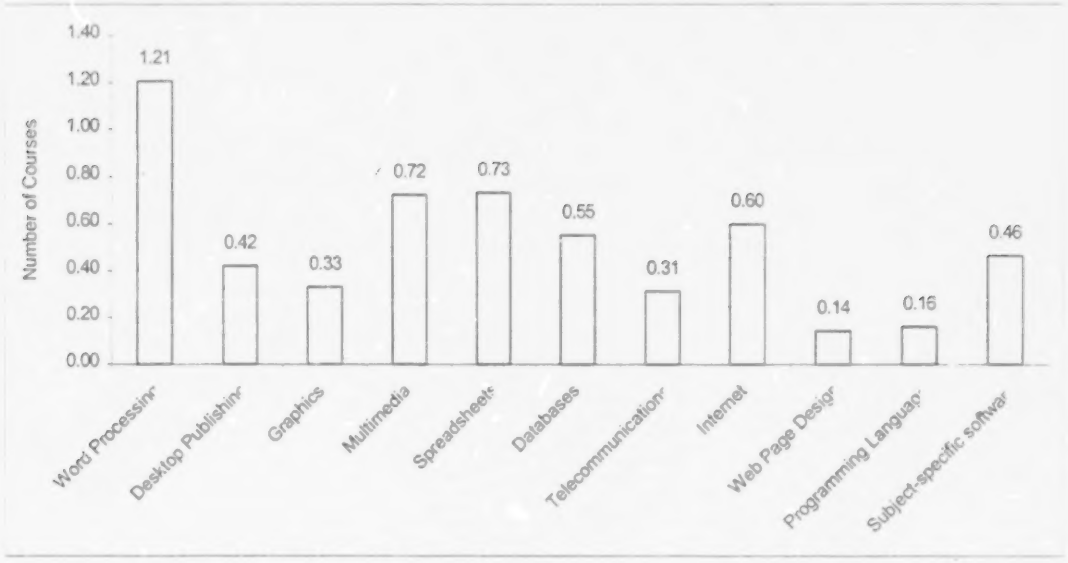
Findings in terms of relationships between computer use and age, years of teaching, and gender were not statistically significant at the 0.05 level.

TRAINING

■ Type of Training

In responding to the survey, teachers reported the number of formal computer courses they had completed. Training received of at least four hours in duration from a contracted or salaried instructor defined the term, "formal computer course". Queries included training involving each of eleven computer technology areas (or types): word processing, desktop publishing, graphics, multimedia, spreadsheets, databases, telecommunications, Internet, Web Page design, programming language, and subject-specific software programs. In each of these areas, the number of courses teachers reported completing ranged from 0 to 20. Ten percent (10%) of the respondents reported receiving no computer technology training of any type. Factoring in these respondents, the highest average number of courses taken was in word processing (1.21). Areas with averages within the midrange were spreadsheets (.73), multimedia (.72), Internet (.60), and databases (.55). Subject-specific software (.46), desktop publishing (.42), graphics (.33), and telecommunications (.31) followed these. Lowest areas were programming language (.16) and Web Page design (.14) (see Figure 6).

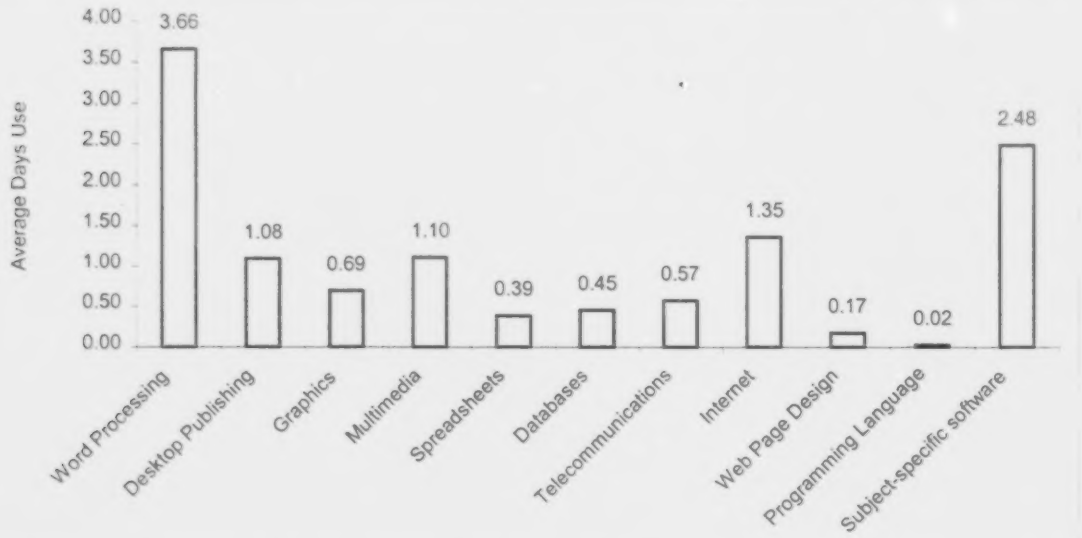
Figure 6. Average Number of Computer Technology Courses Taken by Teachers per Technology Type.



■ Type of Computer Use

Teachers also reported their use of computers for instruction. Computer use directly involving students for a minimum of 15 minutes per class period defined the term, "instructional computer use". Reported use by teachers in days per quarter in each of the eleven technology types ranged from an overall average of 0.02 to 3.66 DPQ. Thirty-one percent (31%) of the respondents reported no computer technology use of any type in their classroom instruction. Others reported no computer use in specific types (e.g., non-users in word processing at 52%, in spreadsheets at 86%, in databases at 91%). Factoring in the non-users, the highest average use was in word processing (3.66 DPQ). Subject-specific software showed the next highest use (2.48 DPQ). Areas that fell next in use were Internet (1.35), multimedia (1.10), and desktop publishing (1.08). Following this group in use were the areas of graphics (0.69), telecommunications (0.57), databases (0.45), and spreadsheets (0.39). Least use was reported in the areas of WebPage design (0.17) and programming language (0.02). Figure 7 displays the patterns of use.

Figure 7. Types of Computer Technology by Average Number of Days Use Per Quarter



■ Comparing Computer Use to Training Received

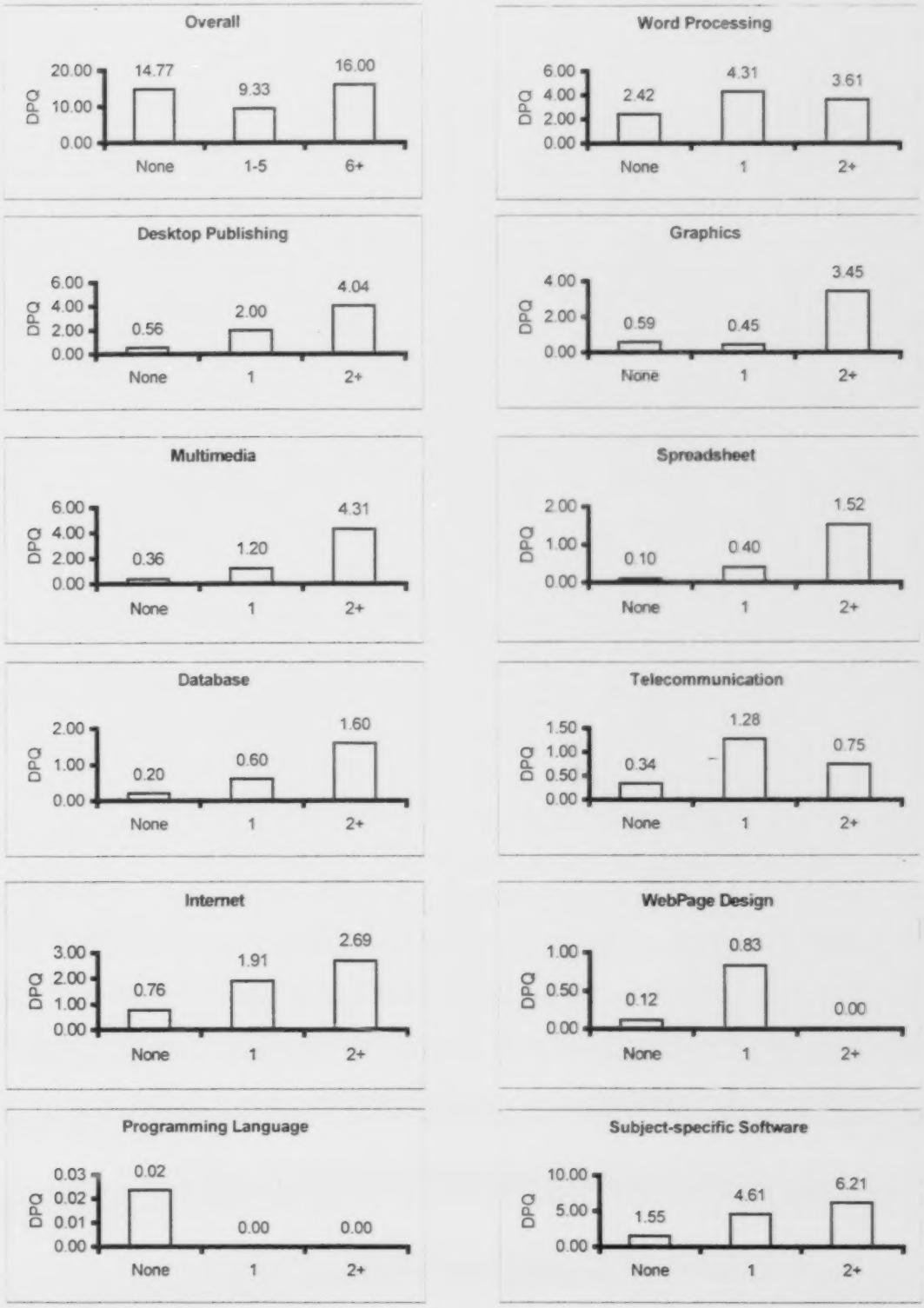
Generally, beginner computer users have taken one training course while intermediate to advanced users have taken two or more training courses (Atkins, 1997; Dexter, 1996; Dyrli & Kinnamon, 1994a; Murphy & Miller, 1996; Thurston, 1990). This set the groupings used regarding training: 'None' (no training courses received), '1', and '2+'. Comparing these groupings to frequency of computer use in each of the types of technology areas, the researcher looked for relationships. Upon examination, increased use and increased amounts of training showed an evident pattern. Using the Spearman's Rho for correlation and an alpha level set at 0.05, statistical analyses indicated that frequency of computer use was significantly related to the amount of training received overall and in nine of the eleven types. Use and training in Web Page design and in programming were not related at a statistically significant level. Table 3 displays the correlations found and levels of significance while Figure 8 shows the patterns of instructional computer use compared to training courses received.

Table 3. Correlation Results between Number of Training Courses Received and Frequency of Instructional Computer Use

Computer Type (or Category)	Spearman's Rho	p value
Subject Specific	0.3707	<.0001
Multimedia	0.3619	<.0001
Desktop Publishing	0.3584	<.0001
Telecommunication	0.2908	<.0001
Spreadsheets	0.2884	<.0001
Databases	0.2612	<.0001
Word Processing	0.2173	0.0009
Graphics	0.1738	0.0081
Internet	0.1408	0.0324
Web Design	0.0913	0.1668
Programming	-0.0280	0.6725
Overall	0.1675	0.0108

p=<0.05

Figure 8. Days of Computer Use per Quarter Compared to Number of Training Courses Taken



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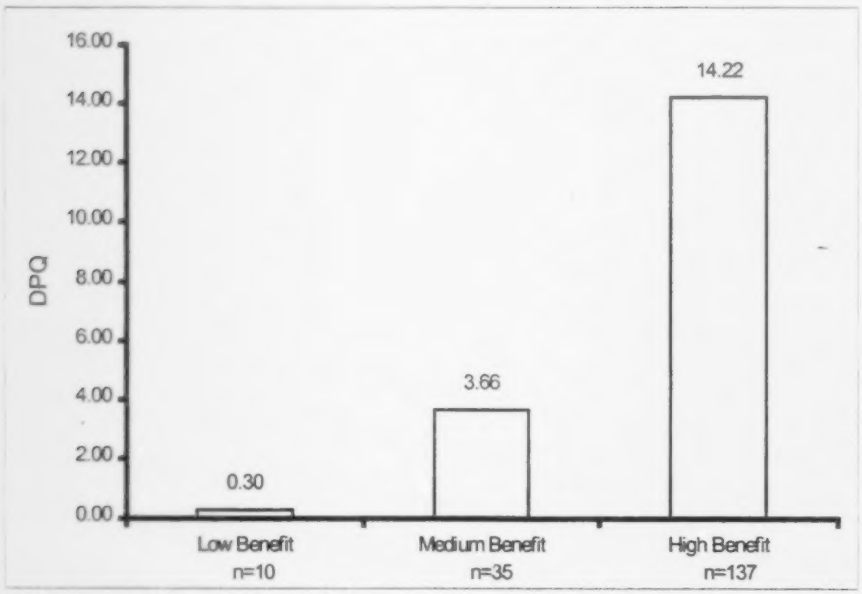
■ Delivery of Training

Certain components of training can aid in the transfer of that training (Baldwin & Ford, 1988, Borillo, 1996, Cahoon, 1995, Joyce & Showers, 1986, Pang, 1997, Strickland, 1990, Wiley, 1992). This study addressed those components specifically identified by Joyce and Showers (1986): presentation of theory, demonstration and modeling of use, coaching and feedback on use, and practice. Surveyed teachers ranked the use of these components by the technology trainer regarding the subsequent benefits toward their instructional use of computers. For reporting purposes, three levels (Low Benefit, Medium Benefit, and High Benefit) grouped the six agreement rankings.

The most pronounced findings in this category showed a parallel between high reported use and high perceived benefits of two components: demonstration/modeling of uses by the trainer and practice. Overall, surveyed teachers perceived the combined use of these components as a high benefit in their subsequent use of computers. Figure 9 displays reported use compared to perceived benefits of overall training components used by the computer technology trainer.

Figure 9. Frequency of Computer Use Compared to Perceived Benefits of Training Components Used during Training.



In the multiple regression analysis at an alpha of 0.05, the training components category did not appear to be significant (0.674) with the remaining two (training and teaching area) of eight elements tested. Withdrawing it, however, resulted in too drastic a change. For this reason, training components was replaced as one of the three elements of strength in the combination of best predictability in instructional computer use.

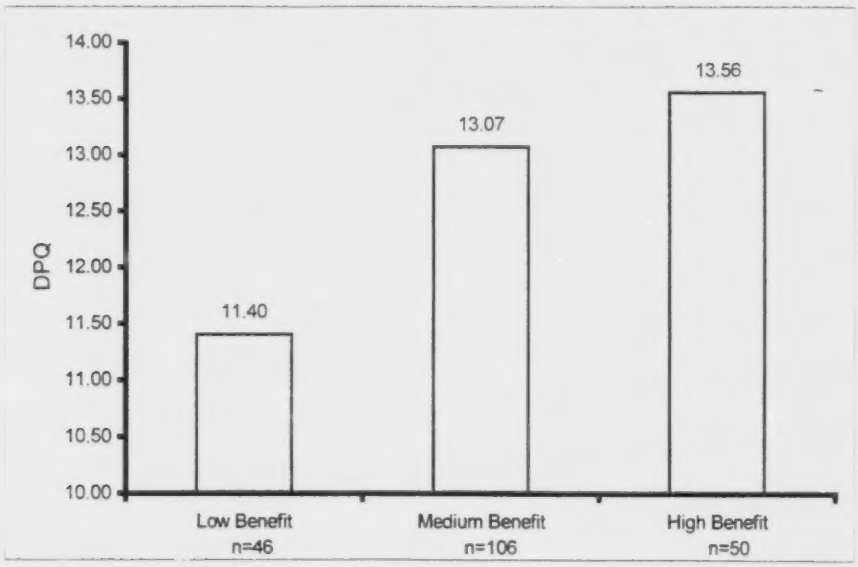
ONGOING SUPPORT

Teachers ranked four sub-category statements each involving administration support, the availability of hardware and software, and on-site technology coordinator support. Respondents ranked the statements with respect to the perceived benefits of the support received toward their subsequent instructional use of computers. For reporting purposes, three levels (Low Benefit, Medium Benefit, and High Benefit) grouped the six agreement rankings.

■ Administration Support

Administration support in the survey included (a) an adequate amount of time for preparing lessons that incorporate technology into the curriculum and for staff sharing opportunities, (b) adequate computer network connections for intranet and/or Internet access, (c) an adequate level of support in computer-related maintenance, and (d) adequate opportunities for computer technology training. Levels of agreement ranked each statement regarding the provision of administration support as a perceived benefit toward subsequent computer use for instructional purposes. Findings showed that a general, although slight, overall increasing trend in reported computer use paralleled increasingly positive levels of perceived overall administration support benefits. Figure 10 displays reported use within the grouped levels of agreement regarding perceived benefits of overall administration support.

Figure 10. Frequency of Computer Use Compared to Perceived Benefits of Administration Support.



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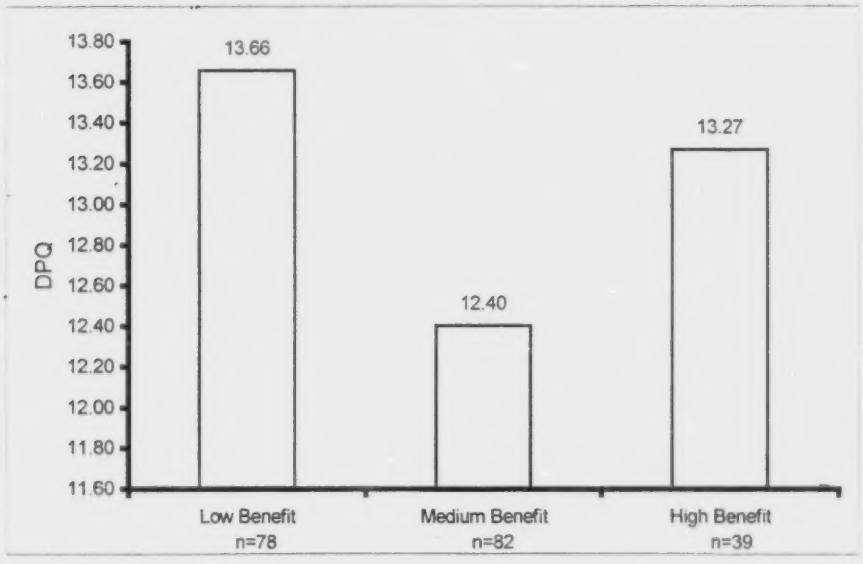
Hardware/Software Availability

Hardware/software availability in the survey included (a) an accessible, adequate computer lab, (b) adequate classroom computers, (c) adequate peripherals (printer, projection device, digital camera, scanner, etc.), and (d) appropriate and adequate software for making curriculum connections. Levels of agreement were ranked for each statement regarding the availability of hardware and software as a perceived benefit toward subsequent computer use for instructional purposes. Findings showed that no apparent increase in reported computer use paralleled increasingly positive levels of perceived benefits. Figure 11 displays reported use compared to perceived benefits of overall hardware/software availability.

Figure 11. Frequency of Computer Use Compared to Perceived Benefits of Hardware/Software Availability.

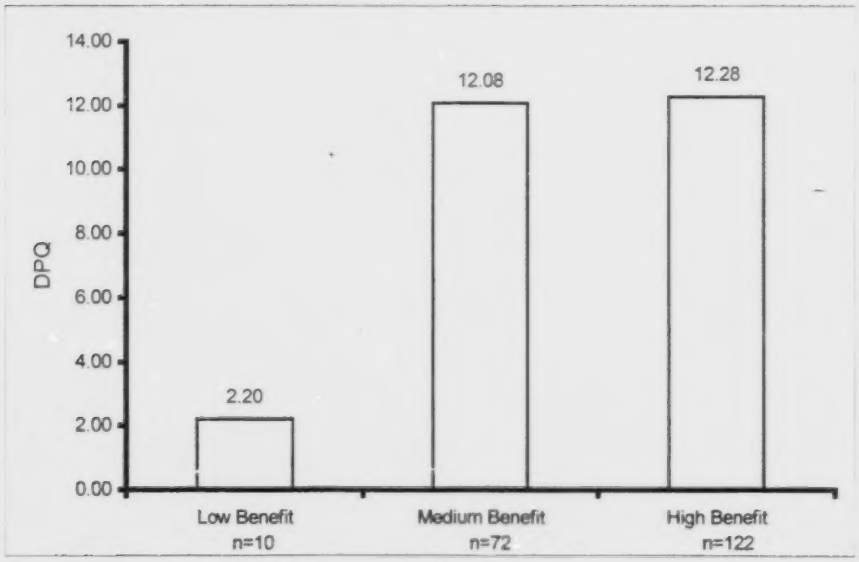


■ On-site Technology Coordinator Support

On-site technology coordinator support in the survey included (a) accessibility for answering technology-related questions, (b) adequate formal and/or informal training, (c) adequate formal and/or informal follow-up sessions following training, and (d) adequate demonstrations and modeling of computer technology uses to meet classroom or lab needs. Levels of agreement were ranked for each statement regarding the provision of on-site technology support as a benefit toward subsequent computer use for instructional purposes.

A markedly steady increase in reported use appeared within one subcategory concerning perceived benefits of demonstration/modeling of use provided by the on-site technology coordinator. Reported use compared to this subcategory increased from 8 DPQ (Low Benefit group) to 10.5 DPQ (Medium Benefit group) to 14.6 DPQ (High Benefit group). Overall, a noticeably heavy increase in reported computer use appeared between low perceived benefits and medium to high perceived benefits of on-site technology coordinator support. A very slight increase in use appeared between medium and high perceived benefits of on-site technology coordinator support. Figure 12 displays reported use within the grouped levels of agreement with respect to perceived overall benefits of on-site technology coordinator support.

Figure 12. Frequency of Computer Use Compared to Perceived Benefits of On-site Technology Coordinator Support.



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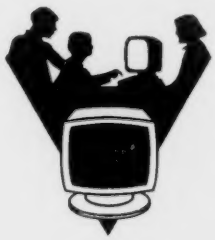
APPENDIX

SURVEY
OF
COMPUTER TECHNOLOGY
TRAINING AND IMPLEMENTATION



Dear Teacher,

The school system is interested in better understanding its strengths and needs regarding current classroom practices in instructional computer technology implementation. Middle school teachers hold a major role in preparing students for the eighth grade Computer Competency Test as well as for computer technology proficiency in their future workplace. For this reason, we ask that you complete the enclosed survey form. Its purpose is to look at computer training received and current instructional computer use.

It will only take a few minutes of your time to answer the questions on the following three pages. Upon completion, please seal the form in the envelope that has been provided and return it to the Curriculum Integration Coordinator in your school within the week. Your responses and perceptions are very important in the results of this research study. Please note that your participation is voluntary and that the information obtained is confidential as well as non-identifiable per respondent.

Questions may be directed to Rosemary Reichstetter by telephone (850-8983) or by e-mail (RReichstetter@wcpss.net).

Thank you for your part in this endeavor.

SURVEY OF COMPUTER TECHNOLOGY TRAINING AND IMPLEMENTATION

Responses to this survey will be non-identifiable by individual person.

SECTION I - DEMOGRAPHIC INFORMATION **School Code** _____

Please check/fill in the blanks:

1. Current Main Teaching Area
   a. _____Language Arts
   b. _____Math
   c. _____Science
   d. _____Social Studies
   e. _____Health/Phys.Ed.
   f. _____Voc.Ed.
   g. _____Special Ed.
   h. _____Foreign Lang.
   i. _____Other

2. Gender: _____Male _____Female

3. _____Total years of teaching experience (including this year)

4. _____Age

SECTION II - INSTRUCTIONAL PRACTICES

From the list of instructional practices listed next to **a** *through* **h** *below, please select the* **THREE** *(3) practices that you prefer and have used the* **MOST OFTEN** *during this school year. Write the letters next to those practices in the blanks beside Items 5, 6, and 7.*

5. _____
6. _____
7. _____

a) Hands-on activities (non-worksheet)
b) Fact memorization and recall
c) Case studies, debates, forums, problem-solving scenarios, simulations
d) Textbook/worksheet/written assignments completed by students independent of each other
e) Student demonstrations/presentations
f) Lectures and teacher-led oral questioning
g) Varied collaborative/cooperative group activities
h) Other (Describe:) _____

8. *When* **computers** *are used instructionally with your students, which* **ONE** *of the following four student groupings do you* **MOST** *typically use?*

   a) _____Students work independently or collaboratively on agreed upon or assigned project-based activities (e.g. a cooperative research project, report, or presentation using the Internet, HyperStudio, spreadsheets, databases, etc.).

   b) _____The whole class receives information from you through the use of one computer (e.g. a PowerPoint presentation that you deliver on a curriculum-related topic).

   c) _____Students work independently on kinds of activities requiring a correct answer (e.g. tutorial-based, drill & practice, or remediation programs such as *SkillsBank*, *Jostens*, or *Cornerstone*).

   d) _____The whole class participates in a simulation or problem-solving discussion through the use of one computer (e.g. Tom Snyder's "Decisions, Decisions" or "Prime Time Math", The Learning Company/MECC's "Africa Trail").

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SECTION III - TYPES OF COMPUTER TECHNOLOGY TRAINING RECEIVED

Formal training for this survey is defined as at least four (4) hours of training received through a contracted or salaried instructor who delivers a specific computer technology training module to an individual or group of participants. Technology credits are usually earned. **Approximately how many formal technology training COURSES/WORKSHOPS** *have you completed in each of the following categories listed below?*

Number of workshops/courses completed	Type of Computer Technology Workshop/Course
9.	Word processing (e.g. MS Word, MS Works Word Processing)
10.	Desktop publishing (e.g. MS Publisher, Student Writing Center)
11.	Graphics (e.g. drawing, painting, clipart)
12.	Multimedia (e.g. HyperStudio, PowerPoint)
13.	Spreadsheets (e.g. Excel, MS Works, ClarisWorks)
14.	Databases (e.g. Access, MS Works, ClarisWorks)
15.	Telecommunications (e.g. TAO e-mail)
16.	Internet
17.	Web Page design
18.	Programming language
19.	Subject-specific software programs (e.g. simulations, Science probeware, *Geometry Sketchpad* for Mathematics, *Writer's Solution* for Language Arts,)

SECTION IV - INSTRUCTIONAL USE OF COMPUTER TECHNOLOGY

For this survey, use of a computer for instructional activities with students is defined as a minimum of 15 minutes per class period. **Approximately how many DAYS in a typical month do you use computer technology for instructional activities with your students in the classroom or lab** *in each of the following categories*?

Approximate number of DAYS in typical quarter	Type of Computer Technology Use
20.	Word processing (e.g. MS Word, MS Works Word Processing)
21.	Desktop publishing (e.g. MS Publisher, Student Writing Center)
22.	Graphics (e.g. drawing, painting, clipart)
23.	Multimedia (e.g. HyperStudio, PowerPoint)
24.	Spreadsheets (e.g. Excel, MS Works, ClarisWorks)
25.	Databases (e.g. Access, MS Works, ClarisWorks)
26.	Telecommunications (e.g. TAO e-mail)
27.	Internet
28.	Web Page design
29.	Programming language
30.	Subject-specific software programs (e.g. problem-solving simulations, probeware, graphing calculations, drill and practice programs, tutorials)

SECTION V - FACTORS AFFECTING COMPUTER TECHNOLOGY IMPLEMENTATION

Using the scale provided, **check the appropriate box** *to the right of each item below in terms of your agreement regarding* **your own instructional use** *of computer technology.*

	0 N/A	1 Strongly Disagree	2 Disagree	3 Mildly Disagree	4 Mildly Agree	5 Agree	6 Strongly Agree
Training Components Used by Instructor(s) in Computer Technology Training **During training**, the use of the following components has subsequently aided in my instructional use of computers:							
31. The **presentation of general principles and theory** (delivery of the rationale for using computers)							
32. The instructor's **demonstration and/or modeling** of computer skills and classroom applications							
33. The **coaching and/or feedback** I received regarding my performance							
34. The opportunity to **practice** (e.g. in simulated conditions; in classroom settings							
School and/or School System Administration Support I am provided with:							
35. An adequate amount of time to prepare lessons that incorporate technology into the curriculum and for staff sharing opportunities.							
36. Adequate computer network connections for intranet and/or Internet access.							
37. An adequate level of support in computer-related maintenance.							
38. Adequate opportunities for computer technology training.							
Hardware/Software Availability Aiding in my instructional use of computers with my students has been:							
39. An accessible, adequate computer lab for my needs.							
40. Having adequate computers in my classroom for my needs.							
41. Having adequate peripherals (printer, projection device, digital camera, scanner, etc.) for my needs.							
42. Having appropriate and adequate software for meeting my needs in curriculum connections.							
On-site Technology Coordinator or Resource Teacher Support (e.g. Curriculum Integration Coordinator) The coordinator/teacher support staff member provides:							
43. Accessibility for answering my technology-related questions.							
44. Adequate formal and/or informal training for my needs.							
45. Adequate formal and/or informal follow-up sessions for me after my completion of technology training.							
46. Adequate demonstrations and modeling of computer technology uses to meet my needs in the classroom or lab.							
Comments (*Please add comments you would like to make regarding your use or non-use of computers with your students.*)							

THANK YOU FOR COMPLETING THIS SURVEY!!

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Building Successful Teacher Use of Computers in the Classroom

Results from a 1998-99 Survey of WCPSS Middle School Teachers

Author

Rosemary Reichstetter, Ed.D.

ACKNOWLEDGEMENTS

I gratefully acknowledge the assistance of the following individuals.

- The WCPSS Middle School Curriculum Integration Coordinators, contact persons in the data collection.

- The dissertation committee in the Adult and Community College Education Department, North Carolina State University, especially to Dr. J. Conrad Glass, Jr., Committee Chair.

- Karen Banks, Ph.D., Assistant Superintendent, Evaluation & Research Dept., WCPSS, advisor in dissertation topic selection.

- Mary Penta, Ph.D., Senior Administrator, Evaluation & Research Dept., WCPSS, collaborator during the report's initial stages.

- The reviewers, particularly to Nancy Baenen, Director of Accountability, Evaluation and Research Dept., WCPSS.

January, 2000
E&R Report No. 00.09

Department of Evaluation and Research
Wake County Public School System